

37. NEW DISTRIBUTIONAL RECORDS OF PLANTS FOR NORTH-EAST INDIA

(With two text-figures)

During the course of studies on the flora of Meghalaya, we could collect 2 interesting plant species, which were identified as *Cardamine impatiens* Linn., and *Phyllanthus longiflorus* Heyne ex Hk. f., of Brassicaceae and Euphorbiaceae respectively. Reference to literature (Hooker 1872-97, Kanjilal *et al.* 1934-40) revealed that these species are new records for North-East India, and are therefore described here.

Cardamine impatiens Linn. is a highly variable species hitherto recorded from Sikkim to Kashmir mostly in the Temperate Himalayan region (1650 to 4000 m). There are no specimens of this species in the Assam herbarium and the present collection from Meghalaya therefore, forms the first report of this plant from North-East India. This species very closely resembles *Cardamine hirsuta* Linn., but can be easily separated as follows :

Petiole auricled at base ; petals less than
twice the length of the sepals *impatiens*

Petiole not auricled at base ; petals
twice the length of sepals *hirsuta*

Detailed description and illustrations of this plant are given to facilitate its easy identification.

Cardamine impatiens Linn. Sp. Pl. 655. 1753 ; Hk. f. Fl. Brit. India 1 ; 138. 1872 ; Collet, Fl.

Simlensis 33. 1902 ; Babu, Herb. Fl. Dehra Dun 56. 1977.

Fls. and Frts : February — April.

Distribution : Temperate Himalayas from Sikkim to Kashmir ; temperate Europe and Asia. In Meghalaya noted only in Shillong on moist and shaded localities, rather very rare.

Herbarium specimens examined : Meghalaya: Khasi Hills — Shillong K. Haridasan 4600 (NEHU).

Phyllanthus longiflorus Heyne ex Hk. f. has been so far recorded from Deccan peninsular region (Fl. Brit. India 5 : 302), and closely resembles *P. debilis* Herb., particularly in vegetative phase. But the present species can be easily distinguished from *debilis* as follows :

Pedicels much longer than leaves ; sepals
in male 4 and in female 6 *longiflorus*

Pedicels much shorter than the leaves ;
sepals 5-6 in both sexes *debilis*

Further, the habitat of these two species are quite distinct; the former occupying (the dry, gravelly, open areas. The specimens from Meghalaya are clearly *P. longiflorus*.

Phyllanthus longiflorus Heyne ex Wall. Cat. No. 7905) Hk. f. Fl. Brit. India 5 : 302. 1887.—*Reidia longiflora* (Heyne) Gamb. Fl. Madras 905, 1925,

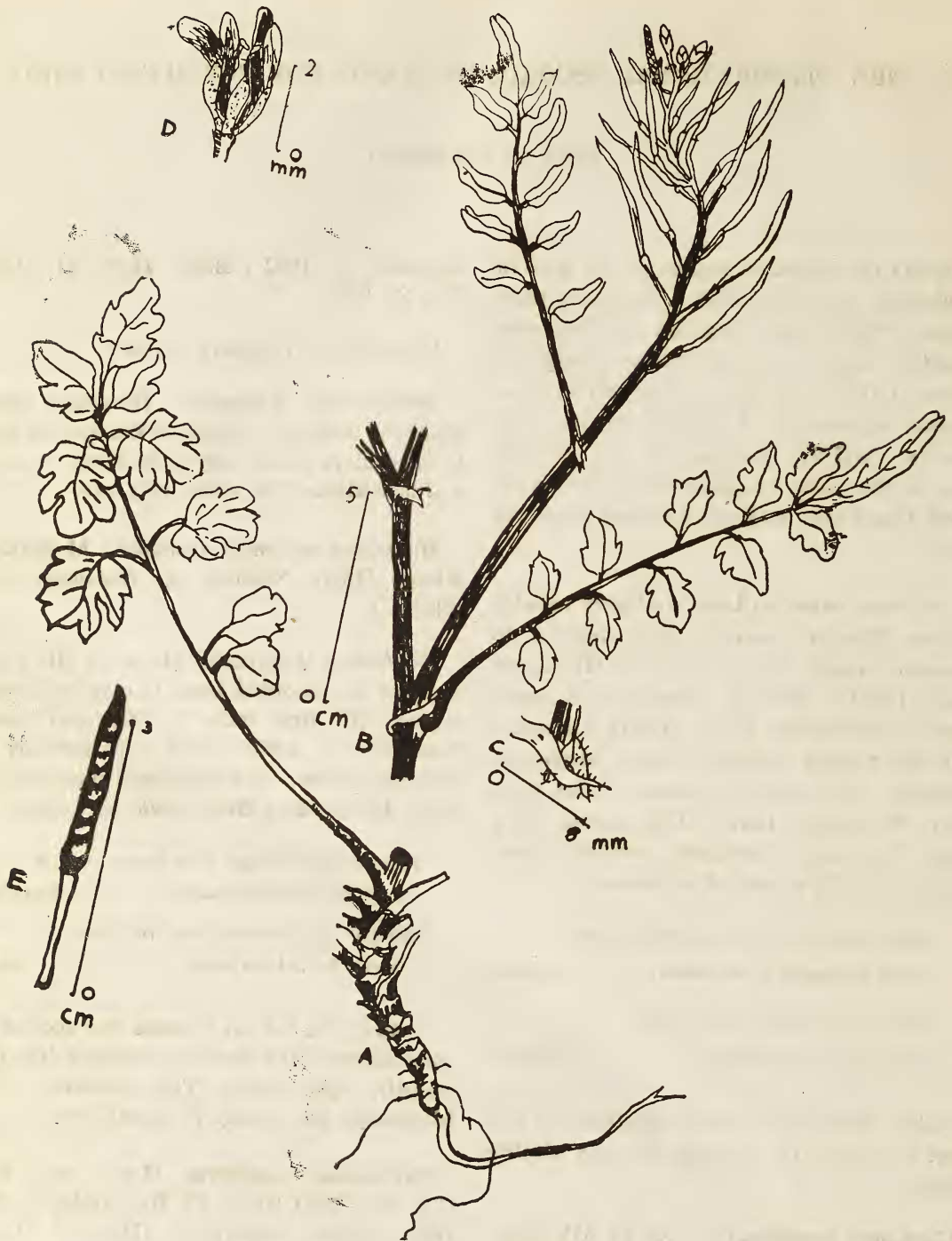


Fig. 1. *Cardamine impatiens* Linn.

A. & B, Portions of plant, C, Auricled petiole base, D, Flower, E, Fruit,

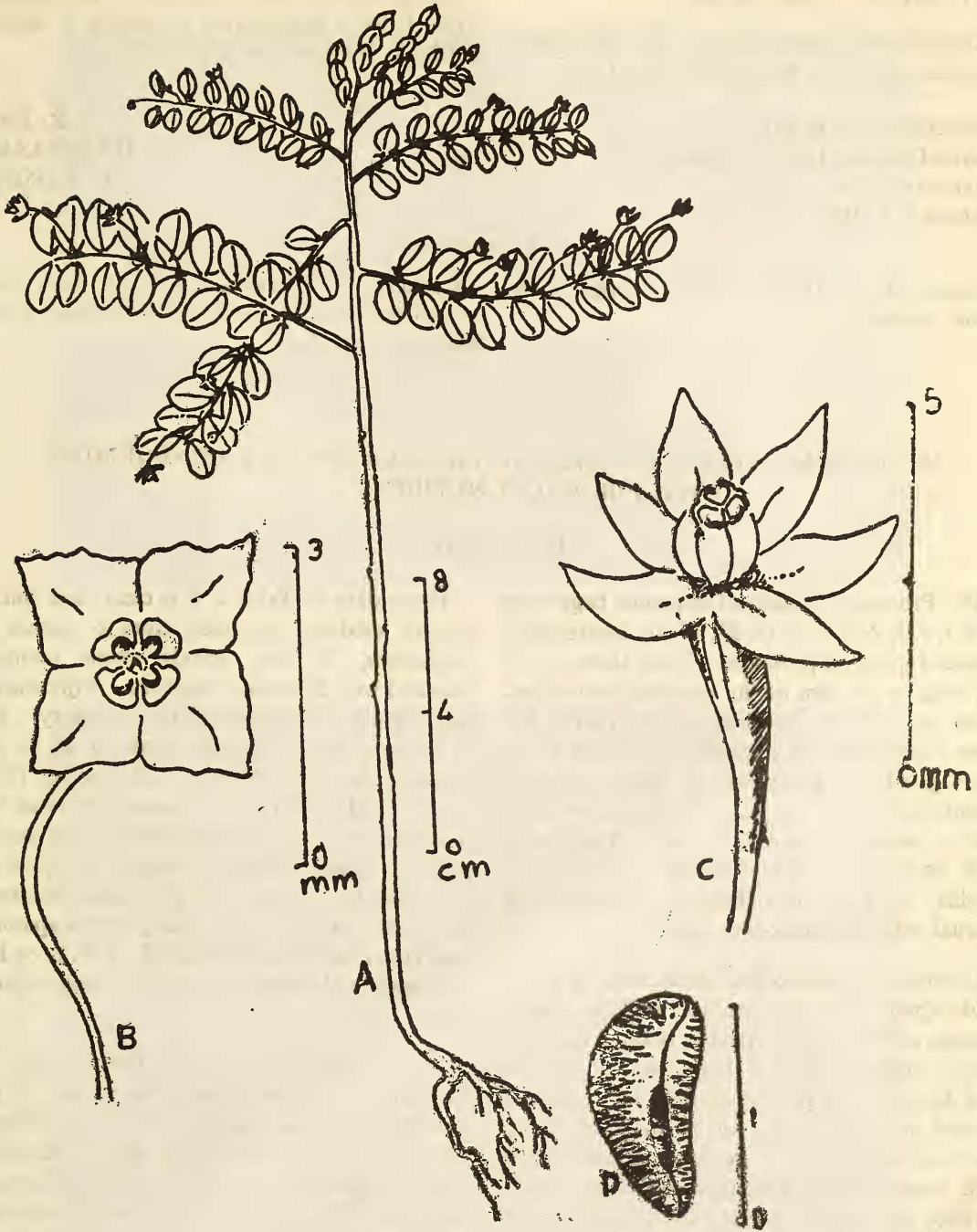


Fig. 2. *Phyllanthus longiflorus* Heyne ex Hk.f.
A. Habit, B. Male flower, C. Female flower, D. Seed.

Fls. and Frts. : June-December.

Distribution : South India ; in Meghalaya recorded only from Balphakram Sanctuary.

Herbarium specimens examined : Meghalaya : Garo Hills — Balphakram Sanctuary Y. Kumar 5402 ; K. Haridasan 4156 (NEHU).

DEPARTMENT OF BOTANY,
NORTH-EASTERN HILL UNIVERSITY,
SHILLONG-793 014,
September 2, 1980.

R. R. RAO
K. HARIDASAN
Y. KUMAR

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38. FLORAL SPIRALS IN *AMORPHOPHALLUS* SPP. NOT CONFORMING WITH FIBONACCI NUMBERS

(With a plate)

The Fibonacci numerical sequence beginning with 0, 1, 1, 2, 3, 5, 8, 13, 21, 34 etc. has recently assumed great importance. Each term in the sequence is the sum of the previous two terms. There are infinite mathematical properties for these simple-looking sequence which are being investigated by hundreds of Mathematicians round the world who have formed themselves into a society called Fibonacci Association with its headquarters in California, and who publish most of their findings in their own journal called Fibonacci Quarterly.

Fibonacci sequence has application in many fields apart from mathematics, such as, architecture, astronomy, art, poetry, botany, zoology, music, engineering and anthropology. Davis and Bose (1971) published data from several species of aroids. The spiral numbers in the spadix of some of these species matched exactly with some of the Fibonacci numbers, while in other species, the spirals numbers differ from Fibonacci numbers as per summary of data given in Table 1,

From data in Table 1 it is clear, that out of the 73 spadices examined from 6 species of *Anthurium*, 72 bore spirals whose numbers matched with Fibonacci numbers. *Diffenbachia dagneus* also comes under this category. But in the rest of the species, some or all of the spadices do not conform to displaying Fibonacci spirals. It may be mentioned, that the clockwise and counter-clockwise moving spirals within a spadix in any *Anthurium* sp. synchronise with two consecutive Fibonacci numbers. But in five other species, many of the spadices bear equal numbers of spirals (5 : 5, 8 : 8, or 13 : 13) running clockwise as well as counter-clockwise.

The observation reported below relate to four species of *Amorphophallus* grown at the Indonesia Botanic Garden, Bogor, Indonesia. The spadix of none of the species examined displayed spirals in accordance with Fibonacci numbers. The most striking and spectacular of the three species is *A. titanum* whose gigantic inflorescence appears only once in three